Space Weather Forecast

Issued on Tuesday, 25 June 2024 at 01:25 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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GOES16/18 satellite data feeds are currently experiencing a data gap since approximately 24/2120 UTC, as a result our Alerts and Warnings service may experience delays or contain incomplete data.

Space Weather Forecast Headline: Further Moderate class flares likely, with a slight chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with the peak flare at 24/0452 UTC, from just over the southwest limb. A very long duration Moderate flare was also observed from one of the sunspot regions on the southwest limb. There are eleven sunspot regions now on the disc, although one of these are soon rotating off the southwest disc, following two that rotated off early today. The most notable in the southeast is a complex, longitudinally wide region. Further details are likely to become apparent as it rotates further into view. Some slow growth has also been observed in a region closer to the centre disc, although this is now maturing into a slightly simpler region. GOES16/18 satellite data feeds are currently experiencing a data gap since approximately 24/2120 UTC, as such the above based on the best data at time of issue.

Multiple Coronal Mass Ejections (CMEs) have been observed, although none have been assessed as having a significant Earth directed component, with the large CME associated the very long period flare from over the southeast limb assessed as passing clearly ahead of Earth's orbit. A potentially significant filament (arc of plasma) disruptions appears to be ongoing at time of issue in the southwest disk however, any resultant CME will be assessed if and when it becomes visible.

Solar Wind / Geomagnetic Activity: Background slow wind conditions were observed but with a weak transient feature in the flow observed from 24/1720 UTC. Solar wind speeds were at background easing from around 340 km/s to near 310km/s. The Interplanetary Magnetic Field, Bt, was weak, but saw a very slight increase following the transient arrival. North-south component, Bz, was weak, and favored a positive (northward) direction. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring although it showed a slight increase towards the end of the period. GOES16/18 satellite data feeds are currently experiencing a data gap since approximately 24/2120 UTC, as such the above based on the best data at time of issue.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate flares are likely, with a slight chance of isolated Strong flares. These most likely from either the recently departed sunspots in the far west in the near term, or

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increasingly the complex sunspot in the southeast.

Solar Wind / Geomagnetic Activity: There are no CMEs currently assessed as significantly Earth-directed, although there is a very slight chance of a glancing interaction from a CME on day 3 (27 Jun), that left the sun on the 23 Jun. Otherwise solar winds are expected to remain near background with no notable enhancements forecast. Geomagnetic activity is forecast to be mainly Quiet, with only isolated Unsettled intervals. Any CME arrivals later in the period bring a slightly increased risk of Active to G1 Minor Storm intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels, with a slight but declining chance of exceeding the S1/Minor Storm threshold should any notable flares occur from any of the three large sunspots now around the western limb.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	60	50	50
Very Active	R3 to R5 X	No	15	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	10	5	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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